RESIDENTIAL CARE CONCEPTS OFFER A SOLUTION FOR HEALTH CARE INSTITUTIONS

MASTER THESIS REAL ESTATE AND HOUSING

Master Thesis Presentation
Sadiq Sharif Azizyar
1313185
January 28th 2016
Real Estate and Housing Faculty of Architecture
Delft University of Technology

Housing for the elderly, Middelburg, Zeeland
CONTENT

1 Introduction
2 Theoretical framework
3 Methodology
4 Results
5 Discussion
6 Conclusion
INTRODUCTION
Reform in the healthcare systems

The sustainability of current healthcare systems is threatened by several societal and economic developments, including an aging population, an increase of unmet medical needs and rising healthcare costs (Janssen, 2013).

The consequence of these developments leads to new healthcare legislation.
Introduction

Healthcare institutions:
- Threat of vacancy in their real estate
- Job lost
- Healthcare institutions are not adaptive enough
Problem description

Healthcare institution context:
New healthcare legislations:
  • Intermural, Normative housing component (NHC)
  • Annual outsourcing
  • Limited number customers
  • No client, no fee.
  • Extramural, Separation residential- and care component

Demographics
Problem description

CASHFLOW OLD LEGISLATION

Housing associations / Mortgagor → Rent / payments → Healthcare institutions → Reimbursement for:
- Residential component
- Residence component
- Care component

Client → Personal contribution EMEA*

CAO / CHI

Government

CASHFLOW NEW LEGISLATION

Housing associations / Mortgagor → Rent / payments → Healthcare institutions → Reimbursement for:
- Residential component
- Residence component
- Care component

Client → Costs for:
- Rent
- Gas, water, electricity
- Maintenance

CAO / CHI → Costs for:
- Meal service
- Well-being
- Cleaning service

Client → Personal contribution EMEA*

CAO / CHI

Government

CIP = Care intensity package
CAO = Central administration office
CHI = College of health insurers
EMEA =Exceptional Medical Expenses Act
CAO = College of health insurers

* Client gets a care without residence indication (CIP 1 t/m 4)
  only pays a personal contribution for the care component.
Problem description

Number of elderly people living in the care homes decreases for numbers of years

Source: CBS, 2013
Problem description

Number of older elderly increases sharply after 2025 (2011=100)

After 2025 increases the number of elderly over-80s sharply

Source: CBS, 2013
Problem description

For healthcare institutions with elderly care real estate, it is important that both the services offered by them as well as the real estate owned by them, will be involved in the decisions about developing a good business model (Olde Bijvank, 2012)(Ginneken, 2014).
Main research question

How to design a business model that aligns residential care concepts with real estate strategies for elderly care institutions.

More specifically, the following sub questions will be addressed:
1. Which target group profiles can be distinguished for health care institutions?
2. Which factors are important for Residential Care Concept that focuses on independent living?
3. Which real estate strategies are deployed within the current healthcare legislation?
4. Which real estate strategies can be aligned with these Residential Care Concepts to formulate a business model?
THEORETICAL FRAMEWORK

Apartments in nursing home De Geinsche Hof, Nieuwegein, Utrecht
Theoretical framework

The residential care concept model:
  • Based upon the HORIZON model
  • Interviews with the experts
Possible real estate strategies:
  • Literature research
  • Interview with the experts
Business model:
  • Based upon the canvas business model
The HORIZON model
The residential care concept model

Profile 1: the elderly in this profile have no or little mobility limitations;

Profile 2: elderly people with mobility limitations: for instance, in climbing stairs, leave and enter the house and move outdoors;

Profile 3: elderly people with mobility- and personal care limitations;

Profile 4: elderly with many functional limitations.

1. Which target group profiles can be distinguished for health care institutions?
The residential care concept model

<table>
<thead>
<tr>
<th>Target group</th>
<th>Care and service products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile 1</td>
<td>No healthcare only services</td>
</tr>
<tr>
<td>Profile 2</td>
<td>Services and plannable care</td>
</tr>
<tr>
<td>Profile 3</td>
<td>Plannable and/or accessible care and services</td>
</tr>
<tr>
<td>Profile 4</td>
<td>Accessible care and 24-hour supervision</td>
</tr>
</tbody>
</table>
The residential care concept model

Target group
- Profile 1
- Profile 2
- Profile 3
- Profile 4

Care and service products
- No healthcare only services
- Services and plannable care
- Plannable and/or accessible care and services
- Accessible care and 24-hour supervision

Real estate strategy
- Independent living
- Cared living
- Intramural living
2. Which factors are important for Residential Care Concept that focuses on independent living?
The residential care concept

Residential care concept 1: intramural living.

Residential care concept 2: Cared living

Residential care concept 3: independent living
The real estate strategies

Strategy 1: Increase the nursing capacity (focus on intramural customers).

Strategy 2: The renting of the care apartments and (possibly) providing extramural home care (focus on extramural customers).

Strategy 3: The reorganisation of real estate portfolio and expand home care capacity (focus on extramural customers).

Strategy 4: The alternative use of the property with the ultimate goal disposing of it.

The overall goal of these strategies are to reducing the vacancy and increasing the profitability of the healthcare institutions.

3. Which real estate strategies are deployed within the current healthcare legislation?
Canvas business model

(A. Osterwalder, Y. Pigneur, 2010)
New business model
Hypothesis

Impact on the revenue streams:

The first real estate strategy => RCC (intramural living)
Negative: key resources (real estate and staff) and the key activity (care products)
Positive: value propositions the number of the intramural customer

The second real estate strategy => RCC (cared living)
Negative: real estate and the key activities (for providing housing and care)
Positive: the number of the extramural customer

The third and fourth strategies => RCC (independent living)
Negative: real estate
Positive: the number of the extramural customer

4. Which real estate strategies can be aligned with these Residential Care Concepts to formulate a business model?
Hypothesis

The application of a business model in which intra- and extramural residential care concepts are aligned with different real estate strategies better explain the level of the profitability (the revenue streams) for health care institutions than only real estate strategies.
METHODOLOGY
Methodology

Care on the Map “zorg op de kaart” combined database
127 elderly care institutions
Geographically dispersed
Regression modelling

$\text{EBITDA}\% = (b_0 + b_1 \text{ Staff cost} + b_2 \text{ Real estate} + b_3 \text{ depreciation of fixed assets} + b_4 \text{ book value} + b_5 \text{ Other Operating cost} + b_6 \text{ Number of intramural customers} + b_7 \text{ Number of extramural customers} + b_8 \text{ Number of households age 65 years and older in the municipality}) + \varepsilon_i$
Regression modelling

Dependent (outcome) Variable

The outcome variable (the revenue streams) is identified as: Earnings before interest, taxes, depreciation, and amortization (EBITDA%).
Regression modelling

Independent (explanatory, predictor) variables

### The Key resource

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Label</th>
<th>unit conversion</th>
<th>unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personeelskosten - 2013</td>
<td>Staff (FTE)</td>
<td>Staff costs</td>
<td>in million</td>
</tr>
<tr>
<td>Aantal appartementen</td>
<td>Real estate</td>
<td>Number of apartments</td>
<td>none</td>
</tr>
<tr>
<td>Afschrijvingen vast eactiva - 2013</td>
<td>Depreciation of fixed assets</td>
<td>Depreciation of fixed assets</td>
<td>in million</td>
</tr>
<tr>
<td>Boekwaarde - 2013</td>
<td>Book value</td>
<td>Book value</td>
<td>in million</td>
</tr>
</tbody>
</table>

### The Key activities

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Label</th>
<th>unit conversion</th>
<th>unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overige bedrijfskosten - 2013</td>
<td>Operating activities</td>
<td>Other operating cost</td>
<td>in million</td>
</tr>
</tbody>
</table>

### The Value propositions

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Label</th>
<th>unit conversion</th>
<th>unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aantal cliënten extramuraal (GHZ &amp; VVT)</td>
<td>Extramural</td>
<td>Number of clients extramural</td>
<td>none</td>
</tr>
<tr>
<td>Aantal cliënten intramuraal (GHZ &amp; VVT)</td>
<td>Intramural</td>
<td>Number of clients intramural</td>
<td>none</td>
</tr>
</tbody>
</table>

### The Costumers segment

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Label</th>
<th>unit conversion</th>
<th>unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aantal huishoudens</td>
<td>Number of household in the municipality</td>
<td>Number of household</td>
<td>in thousands</td>
</tr>
<tr>
<td>Leeftijd 65 jaar en ouder</td>
<td>Number of residences age 65 years and older in the municipality</td>
<td>Age 65 and older</td>
<td>none</td>
</tr>
</tbody>
</table>
RESULTS
# Descriptive statistics

## Independent (explanatory, predictor) variables

<table>
<thead>
<tr>
<th>The Key resource</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>95% CI LB</th>
<th>95% CI UB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff costs*</td>
<td>10,7</td>
<td>11,8</td>
<td>8,6</td>
<td>12,8</td>
</tr>
<tr>
<td>Number of apartments</td>
<td>82,6</td>
<td>43,2</td>
<td>75</td>
<td>90,3</td>
</tr>
<tr>
<td>Depreciation of fixed assets*</td>
<td>0,9</td>
<td>1,3</td>
<td>0,7</td>
<td>1,2</td>
</tr>
<tr>
<td>Book value*</td>
<td>11,8</td>
<td>18,5</td>
<td>8,5</td>
<td>15</td>
</tr>
</tbody>
</table>

* in million €

<table>
<thead>
<tr>
<th>The Key activities</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>95% CI LB</th>
<th>95% CI UB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other operating cost*</td>
<td>3,7</td>
<td>3,7</td>
<td>3</td>
<td>4,4</td>
</tr>
</tbody>
</table>

* in million €

<table>
<thead>
<tr>
<th>The Value propositions</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>95% CI LB</th>
<th>95% CI UB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of clients extramural</td>
<td>175</td>
<td>249,8</td>
<td>129,4</td>
<td>220,5</td>
</tr>
<tr>
<td>Number of clients intramural</td>
<td>195</td>
<td>195</td>
<td>159,4</td>
<td>230,6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Customers segment</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>95% CI LB</th>
<th>95% CI UB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of household in the municipality*</td>
<td>42,5</td>
<td>69,4</td>
<td>30,3</td>
<td>54,6</td>
</tr>
<tr>
<td>Number of residences age 65 years and older in the municipality**</td>
<td>13,6</td>
<td>16,9</td>
<td>10,7</td>
<td>16,6</td>
</tr>
</tbody>
</table>

* in thousands ** in percentage
# Statistical model

## Final model Output (forward method)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>18.74</td>
<td>3.604</td>
<td></td>
</tr>
<tr>
<td>Number of extramural cutomers</td>
<td>0.009</td>
<td>0.004</td>
<td>0.290</td>
</tr>
<tr>
<td>Age 65 and older in the municipality</td>
<td>-0.378</td>
<td>0.188</td>
<td>-0.168</td>
</tr>
<tr>
<td>Number of household in the municipality</td>
<td>-0.297</td>
<td>0.933</td>
<td>-0.271</td>
</tr>
<tr>
<td>Book value 2013</td>
<td>0.022</td>
<td>0.080</td>
<td>0.527</td>
</tr>
<tr>
<td>Staff costs 2013</td>
<td>-0.836</td>
<td>0.140</td>
<td>-1.289</td>
</tr>
<tr>
<td>Depreciation of the fixed assets 2013</td>
<td>0.398</td>
<td>1.347</td>
<td>0.700</td>
</tr>
</tbody>
</table>

R² = .36 ; (p < .05)
Conclusion

Impact on the revenue streams:

The first real estate strategy => RCC (intramural living)
Negative: staff costs *(significant)*
Positive: the number of the *intramural customer* *(no significant)*

The second real estate strategy => RCC (cared living)
Negative: real estate and the key activities (for providing housing and care) *(no significant)*
Positive: the number of the *extramural customer* *(significant)*

The third and fourth strategies => RCC (independent living)
Negative: real estate *(no significant)*
Positive: the number of the *extramural customer* *(significant)*
The final business model

The Key Resources
- Staff (FTE) = Staff costs
- Real Estate = the number of the apartments owned by health care institution
- Depreciation of fixed assets
- Book value

The Key Activities
- Nursing
- Caring
- Housing

Operating activities = other operating costs

The Cost Structure = independent variables

The Value Propositions
- Extramural = extramural customers
- Intramural = Intramural customers

The Revenue Streams = outcome variable (EBITDA%)

The Customer Segments
- Number of households in the municipality
- Age 65 and older in the municipality
Conclusion

The present study tends to support the hypothesis that alignment of Residential Care Concepts with real estate strategies in business models might support profitability for health care institutions.
DISCUSSION

Residential care center The Bloemendal, Deventer, Overijssel
Implementation

By adapting well described residential care concepts and expanding the extramural care provision may have a positive effect on the overall financial performance of the health care institutions, in addition the results suggest that merely focusing on the intramural care in the short and long-term may have adverse effects on the revenues of the health care institutions, given the current policies being very focused on the deferral of intramural care growth.
Restriction and limitation

- The available data were from 2013
- Generalizability of the model
- Negative impact of the customer segment
- The key Partners, customer relationships and channels
Recommendations for further research

• Repeat research every 2 to 3 years
• Change in the healthcare legislation after 2013
• Incorporate care institutions providing elderly care in addition to another kind of primary care in a similar study
• Extend the scope of this research by include all business model components
CONCLUSION

Apartments in residential care center Veldhof, Leidsche Rijn, Utrecht
Conclusion

• It can be concluded that the components of the business model, for health care institution, are a crucial element in the financial performance of their business.

• The key resource factors, such as the staff cost, depreciation of fixed assets and the book value definitely influences the business model performance, and thus the profitability of the elderly health care institution.

• The significant impact of intramural customers does not hold up on the long run. But the number of the extramural costumers most certainly has significant impact on the revenue streams.